

Remarks

The Examiner has rejected claim 15 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,152,788 to Isaacson et al. ("Isaacson et al."). In addition, the Examiner has rejected claims 1, 3-7, 9-14, 16-20, 22, and 24 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,379,005 to Williams et al. ("Williams et al.") in view of U.S. Patent No. 6,050,687 to Bille et al. ("Bille et al."). Finally, the Examiner has rejected claims 21 and 23 under 35 U.S.C. § 103(a) as being unpatentable over Williams et al. The Examiner made the office action final.

In this response, Applicants have cancelled claims 15, 22, and 24, have amended claims 21 and 23, and have added new claims 25-27. Claims 1, 3-7, 9-14, 16-21, 23 and 25-27 are currently pending. Applicants respectfully request withdrawal of the rejections to claims 1, 3-7, and 9-14, 16-21, and 23 and allowance of new claims 25-27.

A. Rejection to claim 15:

Claim 15 was rejected under 35 U.S.C. § 102(b) as being anticipated by Isaacson et al. Applicants have cancelled claim 15 without prejudice.

B. Rejection to claims 1, 3-7, 9-14, 16-20, 22, and 24 :

Claims 1, 3-7, 9-14, 16-20, 22, and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Williams et al. in view of to Bille et al. Applicants have cancelled claim 22 and added the feature to independent claim 21, and have also cancelled claim 24 and added the feature to independent claim 23.

Williams et al. describes a method and apparatus for improving vision and the resolution of retinal images. Specifically, Williams et al. discloses an adaptive optics system that includes a wavefront sensor 154 that includes a computer 150 that provides a signal to a deformable mirror 118. Following an iterative procedure, the deformable mirror ultimately acquires a shape that is appropriate to flatten the distorted wavefront into a plane wave, which improves vision quality. Column 3, lines 5-16. Once the iterations are complete, the final aberration signal can be "used to produce contact lenses to correct for all of the monochromatic aberrations of the human eye or for surgical procedures." Column 3, lines 42-46.

Bille et al. describes a system and method for measurement of the refractive properties of the human eye. The system employs optical components for detecting both the reflection of a first light beam from the anterior surface of the eye, and the reflection of a second light beam from the retina of the eye. A computer is provided for comparing signals received and to construct a topography for the posterior surface of the cornea.

The present invention relates to a method and device for correcting visual defects of the human eye. Independent claim 1 recites a device for correcting visual defects of an eye that includes, among other features, "a wavefront analyzer device", a "topography analyzer unit" and a "beam modification device . . . for processing an optical element." Dependent claim 4 provides that the optical element can be an intraocular lens, an eye lens, the cornea of the eye, a contact lens, an implantable contact lens (ICL), or a spectacle lens. Independent claim 7 has been amended to include the feature of "using a beam modification device to process an ideal optical system." As amended, claim 7 recites a method for correcting visual defects of an eye that includes, among other features, the steps of "determining an optical path of the eye via a wavefront analysis," "analyzing a topography of the eye," and "calculating and using a beam modification device to process an ideal optical system which would result in a correction of the visual defects of the eye."

Applicants respectfully submit that Williams et al. differs from the claimed invention in at least several important respects. For one, Williams et al. does not describe or suggest anything relating to topography analysis. In fact, Williams et al. does not suggest any need to combine his use of wavefront analysis with any type of optical analysis so as to provide improved results. Moreover, Williams et al. does not suggest integrating a "beam modification device . . . for processing an optical element" as part of the Williams et al. system. On the contrary, Williams et al. merely provides that only after the final data is obtained -- after the iterative process is completed -- that data can be sent to a separate system, "a contact lens fabrication system 152 used to fabricate contact lenses, which would duplicate the wavefront compensation characteristics of the deformable mirror 118." Column 5, lines 45-50.

As discussed in Applicant's last response, Bille et al. differs from the claimed invention in that it does not describe a device or method for correcting visual defects at all, but rather merely describes measuring such defects. With regard to correction of visual defects, Bille et al. only offers that the results of the diagnostic evaluation can be used to *prescribe* corrective

elements or to *plan* the conduct of a refractive surgery. Column 1, lines 5-17. Bille et al. therefore also does not suggest integrating a beam modification device for processing an optical element into the measuring system.

Applicants further submit that the Examiner has improperly used hindsight reconstruction to combine the Bille et al. and Williams et al. references, since there is no suggestion in those references or in the prior art in general, to combine them. On the contrary, Applicants submit that Williams et al. actually teaches away from combining topographic analysis, or any other optical analysis, with the Williams et al. wavefront analysis. The object of the Williams et al. invention is to provide a wavefront sensor "which is capable of providing a complete measurement of the eye's aberrations." Column 2, lines 53-56. As apparent evidence of a suggestion to combine, the Examiner points to language at column 8, lines 9-11 of Williams et al., which suggests that "aberrations besides defocus and astigmatism could be corrected with either an open or a closed system." However, that language refers to the detection of all of those aberrations using only the wavefront analyzer and deformable mirror of Williams et al., and not in combination with any other type optical analysis. Rather, Williams et al. system is meant to replace other types of analysis to determine defocus, astigmatism and all other optical aberrations. See for example, column 6, lines 5-31.

Moreover, even if they could be properly combined, Applicants respectfully submit that the combination of Bille et al. and Williams et al. fails to teach the inclusion of a beam modification device for processing an optical element within the same system as a topography analysis unit and a wavefront analysis unit. Thus, the combination of both references fails to teach the use of a single system for processing an optical element that includes a wavefront analyzer device and a topography analyzer unit as provided in claim 1.

As described in paragraph [0020] of the application, the inclusion of these features in a single system, as recited in claim 1, provides a unique device capable of processing of an optical element "virtually simultaneously" with analyzing a wavefront of the optical path in the eye and analyzing the topography of the eye. The present invention therefore provides a unique and nonobvious arrangement that would enable "an online test of the optical path in the eye such as it is currently modified via the operation and/or [an online test of] the surface of this eye at the current point in time can be carried out during the processing of the optical element . . . and be taken into account in the further operation or processing." See paragraph [0020]. Neither Bille

et al. nor Williams et al. provide any suggestion for a system that includes a beam modification device. Nor do they even recognize the desirability for a combined device capable of carrying out such simultaneous analysis and processing.

Because Williams et al. and Bille et al., either alone or in combination, fails to teach all of the features of independent claims 1 and 7, Applicants respectfully request that the rejections to those claims under 35 U.S.C. §103(a) be withdrawn. For at least the same reasons, Applicants further request withdrawal of the rejections under 35 U.S.C. §103(a) to dependent claims 3-6, 17 and 19, which depend from claim 1, and to dependent claims 9-14, 16, 18, and 20, which depend from claim 7.

C. Rejections to 21 and 23:

Claims 21 and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Williams et al. Claim 21 has been amended to include the additional feature of a topography analyzer unit for analyzing the surface of the eye, from claim 22, which was cancelled without prejudice. Similarly, claim 23 has been amended to include the feature of analyzing a topography of the eye and that the processing of the intraocular lens or implantable contact lens is performed using a beam modification device.

Applicants respectfully submit that the added features are not suggested in Williams et al., and therefore request withdrawal of the rejections to claim 21 and 23 under 35 U.S.C. §103(a). Applicants further submit that claims 21 and 23 are further patentable over a combination of Williams et al. and Bille et al. for at least the reasons discussed above.

D. New Claims 25-27:

Applicants have added new claims 25-27 and respectfully submit that those claims are allowable. New claim 25 depends from claim 21 and includes the features of claim 3. New claim 26 depends from claim 25 and the additional feature from claim 6. New claim 27 depends from claim 23 and includes the feature that the “processing is performed virtually simultaneously with at least one of the determining of the optical path of the eye and the analyzing of the topography of the eye.” Support for the added features is found in the application, for example in claim [0020]. As discussed above, neither Bille et al. nor Williams et al. suggests the simultaneous processing or even recognize its desirability.

CONCLUSION

In view of the amendments made and arguments presented, Applicants respectfully submit that the presently pending claims are in condition for allowance.

An early and favorable action on the merits is earnestly solicited.

Respectfully submitted,
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